PHOTOGRAPHIC INTERPRETATION REPORT

INTRODUCTION TO THE SIGINT INSTALLATION SERIES CHINA

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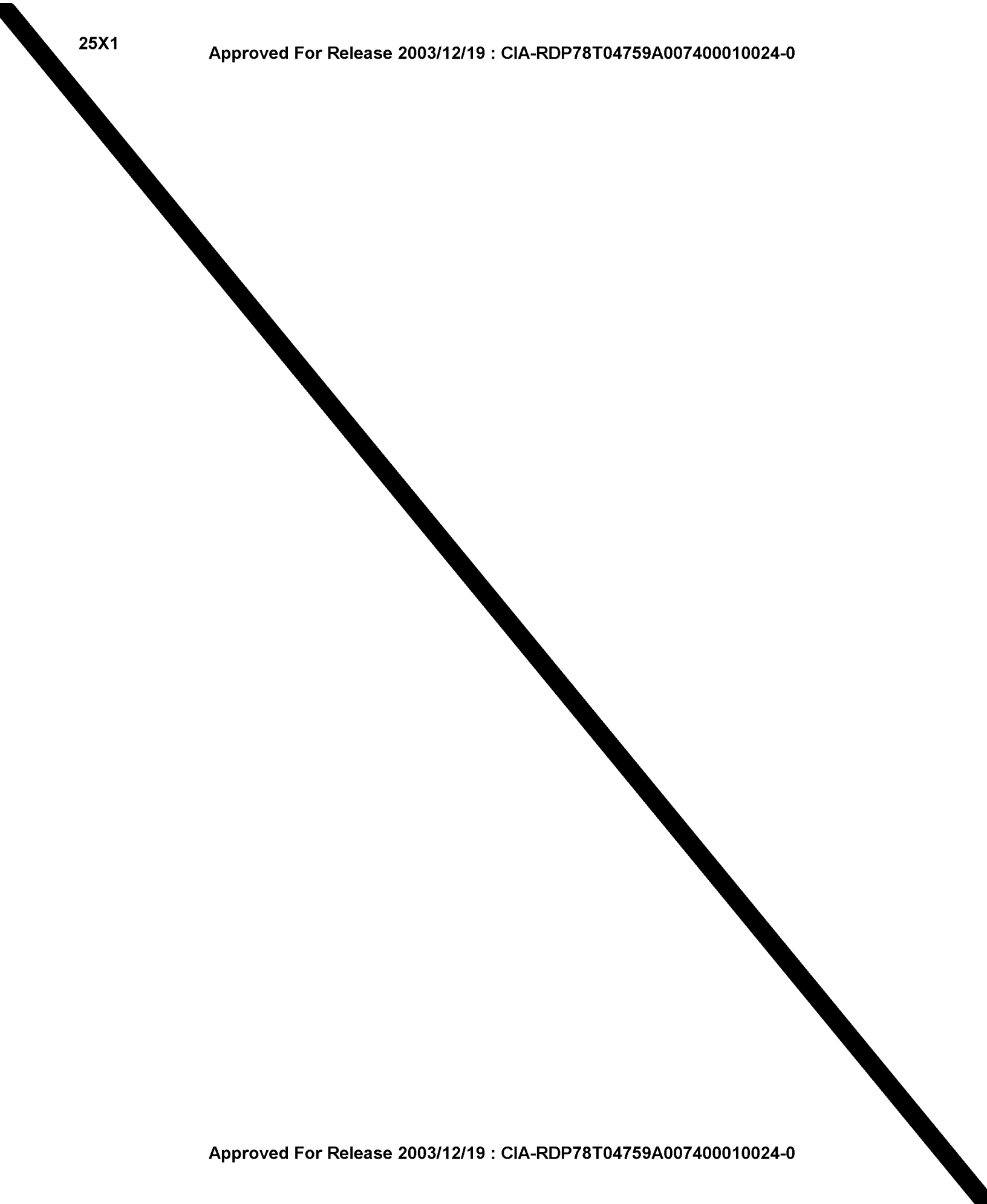

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INTRODUCTION TO THE SIGINT INSTALLATION SERIES, CHINA

INTRODUCTION

This report introduces an NPIC series of reports on the Chinese Communist SIGINT facilities and is a partial answer to NSA requirement NSA/SOC/R96-67. The series will consist of short individual reports which will use a standard format. This series of reports will include all suspect and known THICK EIGHT and FIX EIGHT facilities as well as those identified on future

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CHINESE SIGINT FACILITIES

The basic Chinese SIGINT facility consists of a THICK EIGHT or FIX EIGHT as a radio direction finder. These facilities, which are capable of determining both signal azimuth and frequency, have some type of communications antenna associated with them. Although an effort has been made to identify DF facilities in all frequency ranges, only THICK EIGHT and FIX EIGHT facilities in the MF and HF ranges have been identified to date in China.

The communications antennas associated with the SIGINT facilities consist of or are a combination of fishbone, vee, horizontal dipole, or rhombic antennas. There is no apparent feature or characteristic which distinguishes these facilities from other communications facilities. Therefore, any communications facility within the proximity of the DF array is suspect and its description will be included in these reports.

The World Aeronautical Chart (WAC) number, Basic Encyclopedia (BE) number, NPIC number, and category code (Cat Code) in the individual reports are unique identifying numbers and letters assigned to the THICK EIGHT components of the SIGINT facilities. Similar identifying numbers and letters assigned to other components of the facility will be included in their descriptions.

THICK EIGHT ARRAY

The THICK EIGHT array (Figure 1) is a small version of the KRUG array. 1/ The THICK EIGHT arrays identified to date in China appear to be similar to the THICK EIGHT array previously observed at [redacted] (Figure 2). 2/ The functional uses of the array are radio direction finding (DF), aid to air navigation, SIGINT monitoring receiver, and communications receiving including both foreign and domestic intercept. The array may also serve a secondary function in air traffic control and nuclear event detection. 25X6

Although the THICK EIGHT array has a shorter range than the KRUG, it is considered to be very versatile, but less expensive to construct and maintain. The characteristics of the THICK EIGHT array are:

A. Frequency - - - 2 to 20 MHz
B. Range - - - - 1,000 to 1,500 nautical miles (nm)
C. Bearing - - - - 360 degrees
D. Accuracy - - [redacted] 25X1D

Two types of THICK EIGHT arrays have been identified. Both are aerial arrays which consist of 8 elements arranged symmetrically around a central sense element. Each of the 8 elements consists of a cylindrical cage approximately [redacted] feet high and with a diameter of approximately [redacted] The 8 elements of the THICK EIGHT A (Figure 2) are arranged in a circle with a diameter of approximately [redacted] and the 8 elements of the THICK EIGHT B are arranged in a circle with a diameter of approximately 100 feet. Each of the 8 cage elements of the THICK EIGHT B array has a central rod which projects above the cage approximately 15 feet. At the center of both types of arrays is a central sense element or aerial approximately [redacted] which is mounted on top of a small central control hut so the sense element extends above the level of the cage elements. 25X1D 25X1D 25X1D 25X1D 25X1D

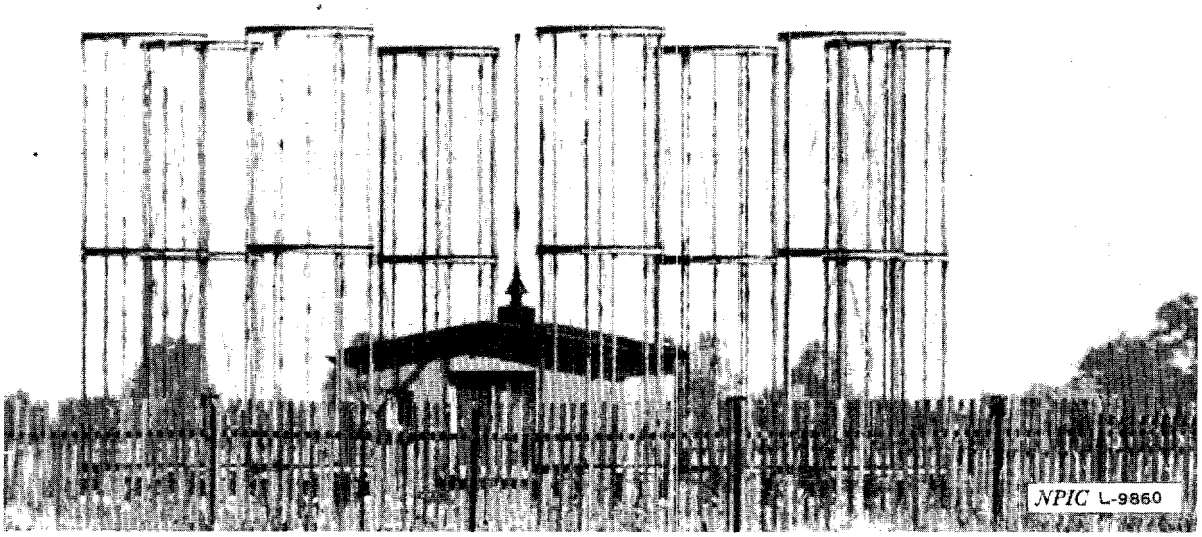

FIGURE 1. TYPICAL THICK EIGHT FACILITY.

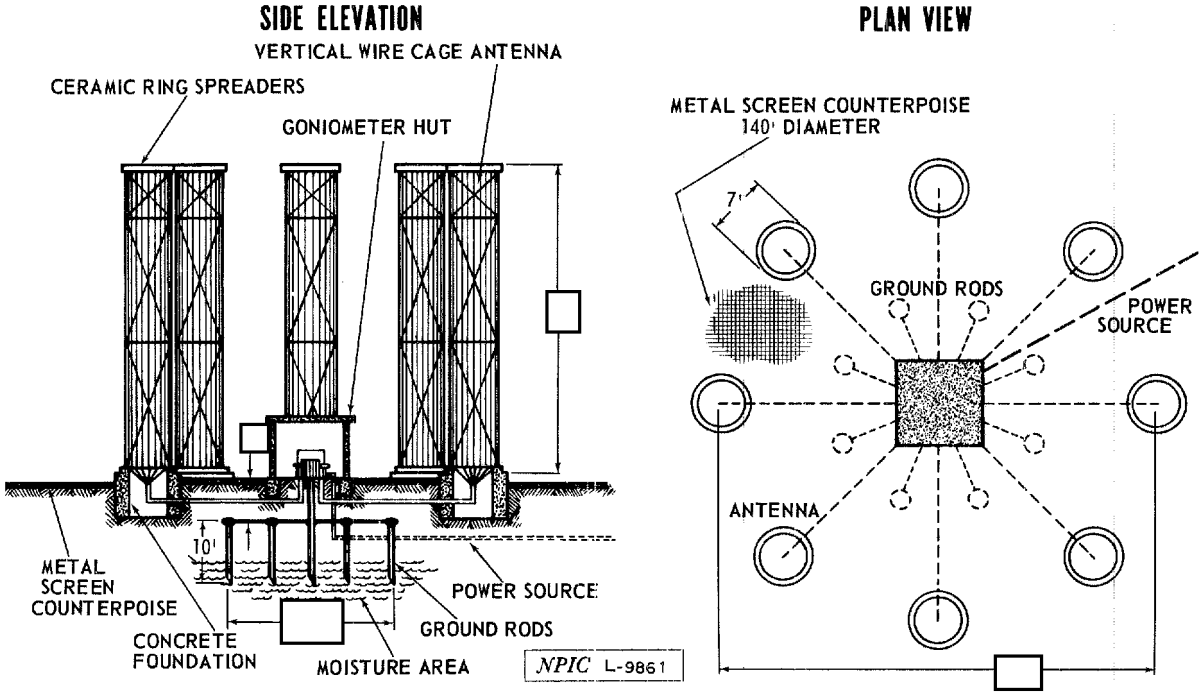

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FIGURE 2. LAYOUT OF THICK EIGHT,

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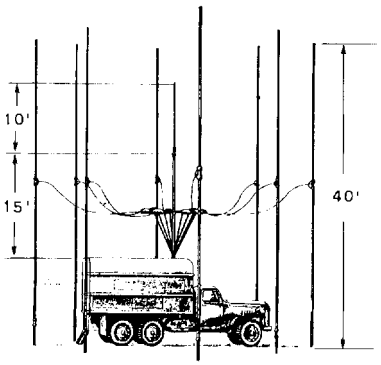

FIX EIGHT

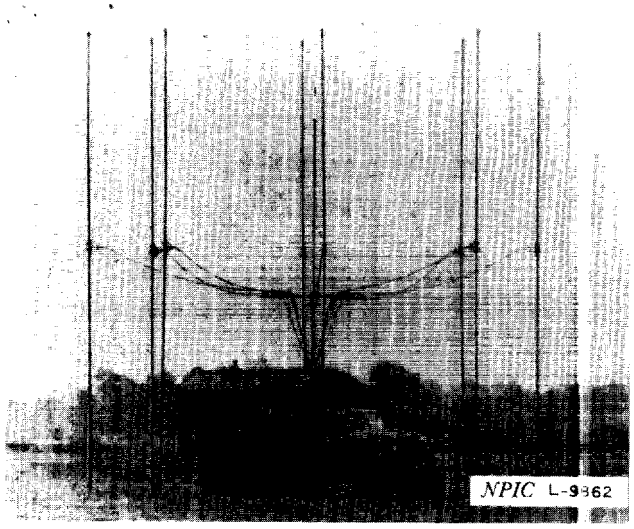

FIGURE 3. TYPICAL FIX EIGHT FACILITY.

FIX EIGHT ARRAY

The FIX EIGHT array (Figure 3) is a passive HF radio direction finder (DF) which may be configured as either a fixed or a mobile array. Figure 3 is a line drawing of the FIX EIGHT array which is adapted from a Pacific Air Forces Command publication. 3/ The FIX EIGHT arrays observed in China are usually fixed and are usually seen near THICK EIGHT arrays. Possibly the FIX EIGHT array is used to augment the THICK EIGHT as the THICK EIGHT is used to augment the KRUG array in the USSR. It appears that a FIX EIGHT operated in concert with a THICK EIGHT probably will increase the resolution of the radio direction finder at its maximum range limits. The functional uses of the FIX EIGHT array include direction finding aid to air navigation, SIGINT monitoring, and communications receiving.

The FIX EIGHT array consists of 8 vertical dipole elements arranged in a circle approximately 40 feet in diameter. The fixed arrays have a small control hut at the center and the mobile arrays have a small control van at the center. On the top of the control hut or van is a central sensing antenna or element. The characteristics of the FIX EIGHT are:

A. Frequency - - - 2 to 20 MHz
B. Range - - - - 1,000 nm approximately
C. Bearing - - - - 360 degrees
D. Accuracy - - [redacted] 25X1D

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REFERENCES

DOCUMENTS

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1. NPIC, *Introduction to the KRUG Installation Series*, Oct 65 (TOP SECRET 25X1
2. "New Radio Facility Operating in Soviet Bloc," Air Intelligence Digest, Mar 60, p 25 (SECRET)
3. Air Force, Pacific Air Forces, PACOM AIS-6, *Electronic Intelligence Report*, Apr 64 (SECRET)

REQUIREMENT

NSA/SOC/R96-67

NPIC PROJECT

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